



# Hidradenitis suppurativa.

## A case report



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## Hidradenitis suppurativa. A case report.

*Hidradenitis suppurativa is a disease with underestimated incidence, consequences and treatment difficulty. Regarded as a minor illness, for the patient it is disabling physically and socially, and for the doctor it is a challenge in choosing the appropriate treatment. We present the case of a 28-year-old man who presented with an advanced and persistent form of hidradenitis treated in a general surgery department. Solving the case combined conservative and surgical treatment (wide excisions, plasties with fasciocutaneous superior gluteal artery perforator flap, thoracodorsal artery perforator flap, free anterolateral thigh flap). This case illustrates the problems raised by a seemingly trivial disease.*

KEY WORDS: Fasciocutaneous Superior Gluteal Artery Perforator Flap, Follicular Occlusion, Free Anterolateral Thigh Flap, Hidradenitis Suppurativa, Skin Ulcer, Skin Fold, Thoracodorsal Artery Perforator Flap

## Introduction

Hidradenitis suppurativa (Verneuil disease) is a chronic inflammatory disease caused by obstruction of the ducts of apocrine glands<sup>1</sup>. Although the first description of the disease, made by Alfred Velpeau, dates back to 1839<sup>2</sup>, and the connection with the sweat glands was made by Aristide Verneuil in 1854<sup>2</sup>, only in 2009 a definition of the disease was adopted by consensus<sup>3,4</sup>. The disease occurs after puberty, although there have been communicated cases of hidradenitis in children on the verge of puberty<sup>5-8</sup>. On the other hand, the disease is less common in men after 50 years and in postmenopausal women. The association with this age cate-

gory leads to a possible effect of sex steroid hormones (androgens, in particular<sup>9</sup>) on the apocrine sweat glands, but not all observations support this hypothesis<sup>10</sup>.

The disease belongs to the follicular occlusion tetrad, which also includes acne conglobata, dissecting cellulitis of the scalp and pilonidal sinus<sup>11</sup>.

The factors that cause the obstruction are extremely varied: genetic, hormonal, immunological, mechanical (using antiperspirants, hair shaving), constitutional (obesity) factors are incriminated as well as overexposure to heat and smoking<sup>12-15</sup>. However, poor hygiene is not a cause of hidradenitis<sup>12</sup>, which is consistent with the pathophysiological mechanism: infection is a secondary phenomenon<sup>16</sup>. Following the obstruction of the ducts of the apocrine glands, the glands dilate and rupture; secondary infection occurs, with the formation of abscesses and fistulas with branched trajectories. Chronic inflammation leads to fibrosis and the appearance of retractile scars<sup>2,13,17</sup>.

The anatomic regions most commonly affected are the axilla and groin, but the disease also occurs in mammary and submammary regions, perineum and sacral region<sup>18</sup>. The distribution of lesions largely corresponds

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## Case Report

puration. As the patient reports, the first symptoms appeared 3-4 years before, through the apparition of axillary nodules. The nodules were painful, expanded in volume over time, and turned into persistent / chronically evolved fistulous abscesses. Similarly, a fistulous abscess formed at the level of the intergluteal cleft, followed by a persistent purulent discharge. Prior to the presentation to us, the patient was treated with axillary incisions and evacuation of abscesses. These were not followed by healing, but the evolution was chronic, with the extension of the suppuration, the appearance of new fistulous orifices at the level of the axillae, the sacral region, the inguino-scrotal grooves and the foreskin. Bacteriological cultures showed a strain of *Staphylococcus epidermidis* and various antibiotics were administered intermittently. Clinical examination at presentation revealed skin ulcers, hardened thick skin folds and fistulous orifices with pus in the axillae and inguino-scrotal grooves, numerous fistulous orifices with pus and cutaneous hyperpigmentation in the sacral region and multiple fistulous orifices in the foreskin (Fig. 1). The mobility of the arms was limited by pain and skin lesions, the patient being able to abduct the arms up to about 45°. At cardiac auscultation a systolic murmur was perceived.

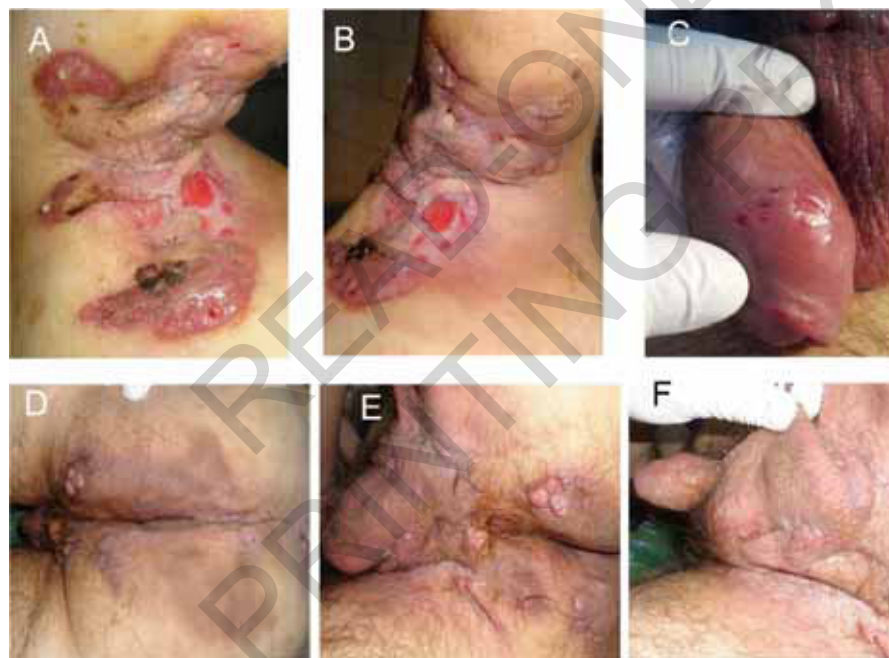


Fig. 1: Lesions on presentation: A) Left axilla; B) Right axilla; C) The penis; D) The sacral region; E) Posterior perineum; F) Scrotum.

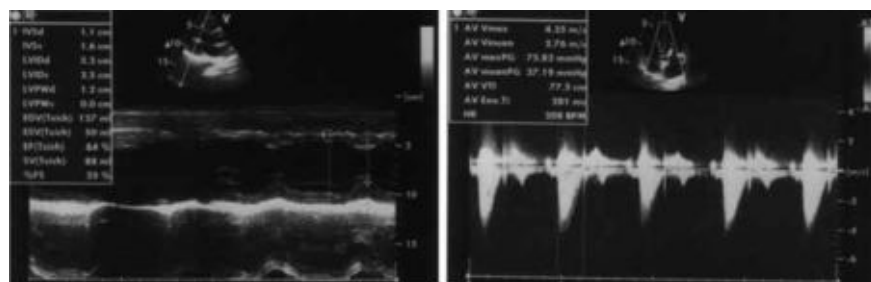


Fig. 2: Echocardiography.

Laboratory tests showed iron deficiency anemia (hemoglobin 8 g/dL, hematocrit 28%, serum iron 30 µg/dL) and inflammatory syndrome (erythrocyte sedimentation rate 80 mm/1 h). Serologic testing for human immunodeficiency virus (HIV), syphilis, chronic infection with hepatitis viruses B and C, as well as Chlamydia trachomatis were negative. Bacteriological examination showed a bacterial association: *Proteus mirabilis*, *Escherichia coli* and *Klebsiella* spp. Echocardiography revealed subvalvular aortic stenosis through subaortic membrane (Fig. 2).

Treatment with prednisone was administered, initially at a dose of 60 mg per day. Each week the daily dose was

reduced with 5 mg. In parallel, antibiotics (vancomycin, clindamycin) were administered. Topical treatment with antiseptics and 2% clindamycin ointment was performed. The evolution under treatment was favorable: the inguino-scrotal and foreskin lesions healed with the formation of scars. At the level of the sacral region the edema, the pigmentation area and the amount of pus were reduced. At the level of the axillae the purulent secretion disappeared, the marginal epithelialization began and some of the fistulous orifices closed (Fig. 3). The mobility of the arms was improved, the abduction becoming possible up to 90°.

Surgical treatment began with surgery for the sacral



Fig. 3: Lesions after treatment with clindamycin and prednisone: A) Left axilla; B) Right axilla; C) The penis; D) The sacral region; E) Posterior perineum; F) Scrotum.

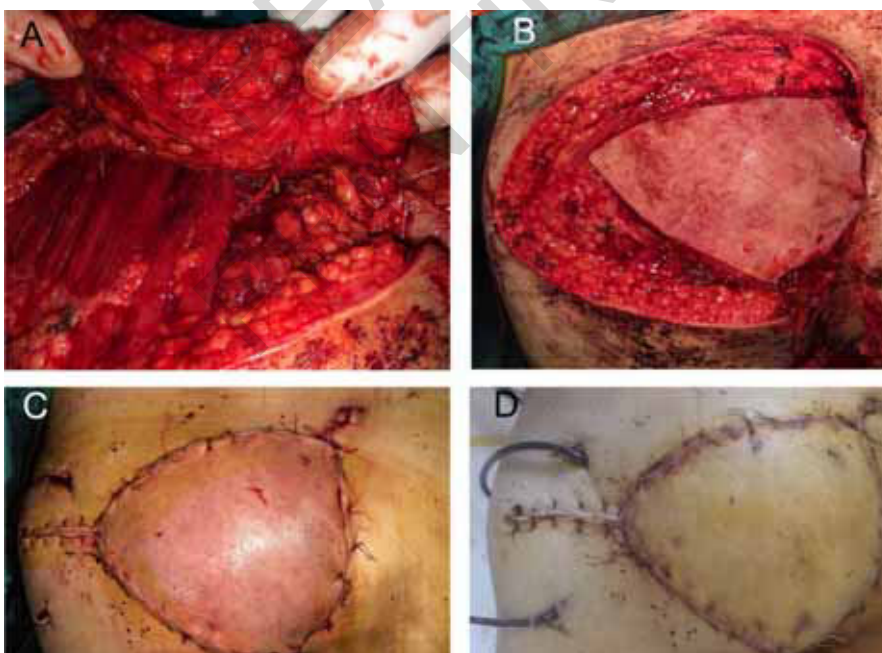


Fig. 4: Surgery for sacro-coccygeal lesions: A) Fasciocutaneous superior gluteal artery perforator (SGAP) flap; B) Wet flap to be sutured; C) The appearance of the flap at the end of the operation; D) The appearance of the flap 3 days after surgery.



lesions. Extensive excision of the affected skin and adipose tissue was performed. The result was a wide defect for the covering of which a pedicled fasciocutaneous superior gluteal artery perforator (SGAP) flap from the right buttock was used (Fig. 4). In evolution, the flap was viable, but a suture dehiscence appeared in the vicinity of the posterior perineum. A second operation was performed after 2 weeks, when the affected tegument

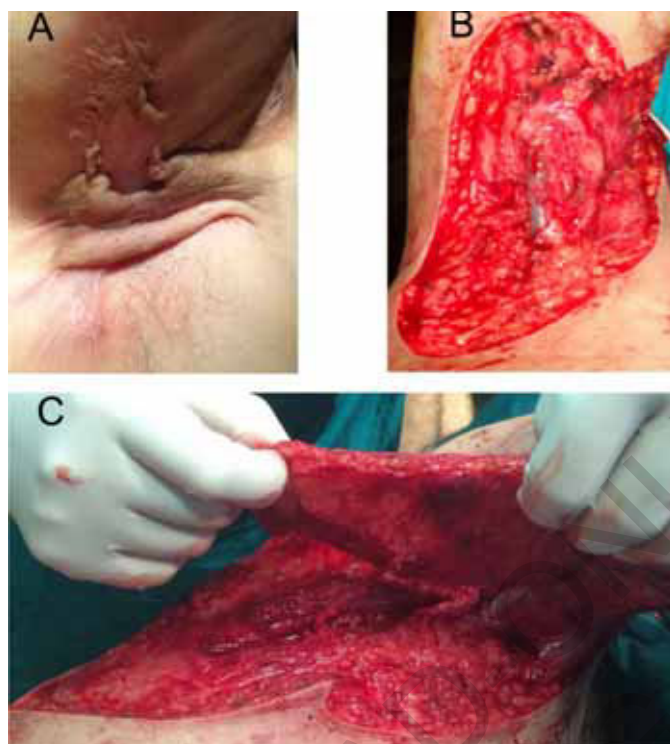


Fig. 5: Operation for right axillary lesions: A) Appearance before surgery; B) Skin defect resulting from excision; C) Thoracodorsal artery perforator (TDAP) flap prepared for grafting.

was removed from the right axilla. A pedicled thoracodorsal artery perforator (TDAP) flap was used to cover the resulting defect (Fig. 5). During the same operation, a V-Y advancement flap was used to cover the wound dehiscence in the buttock. Within 10 days the pedicled TDAP flap in the right axilla necrosed with formation of dry gangrene. As a result, this flap was excised and replaced with a free anterolateral thigh (ALT) flap; the arterial pedicle of the ALT flap was anastomosed to the right axillary artery (Fig. 6). Despite a dehiscence of the wound (through which a hematoma was evacuated) the evolution was favorable, the flap being viable at hospital discharge.

The patient left the hospital on the 83rd day after admission, with healed postoperative wounds in his groins and foreskin. At the levels of the sacral region and the right axilla, the flaps were viable with wound dehiscence of about 3 cm healing per secundam. Within a month, these wounds healed. Permanent hair removal at the inguino-scrotal level was recommended and the patient was scheduled for surgery on the left axilla. Unfortunately, the patient gave up treatment on his own initiative. The patient did not show up for further treatment and was lost to follow-up.

## Discussions

The presented case illustrates the complex issues raised by a seemingly trivial disease.

The diagnosis of the disease is based on the highlighting of specific lesions, their location in certain regions along with their chronic nature, without tendency to heal. Even at an early stage, when the patient reports pain, the diagnosis can be established by finding subcutaneous nodules in specific areas. However, the diagnosis may be delayed. The abscessed nodules are interpreted

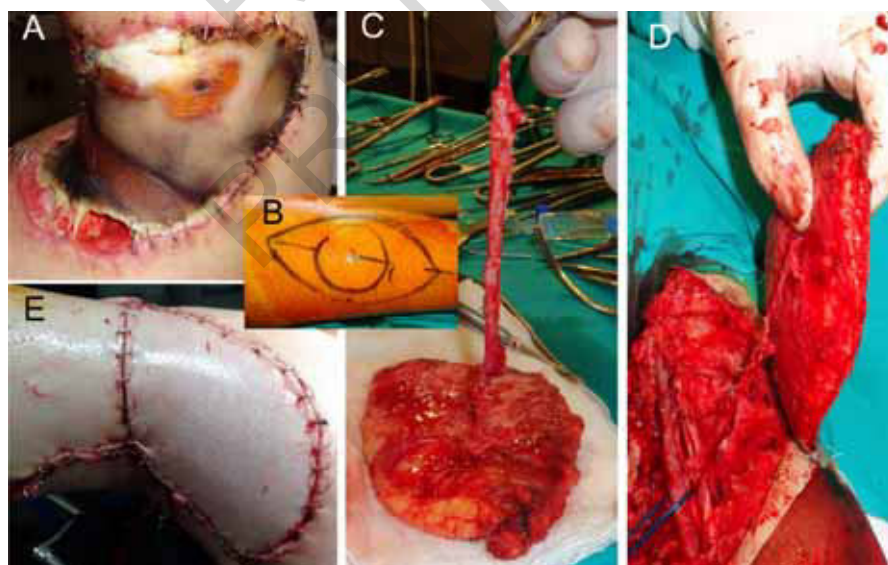


Fig. 6: Reintervention for the right axilla: A) Dry necrosis of the TDAP flap; B) Donor area at the level of the right thigh; C) Free anterolateral thigh (ALT) flap prepared for vascular anastomosis; D) Anastomosis between the arterial pedicle of the flap and the axillary artery; E) ALT flap after suture.

as simple abscesses, incisions are made to evacuate the pus, and these are followed in a large proportion of cases by chronic suppuration and the appearance of more complex lesions. The presented case falls into this category. Studies in the literature have found median delay of the diagnosis between 2.3 and 13.7 years<sup>28,29</sup>. The delay is largely due to the patient's late presentation, but this is not the only cause. Often the diagnosis is established 1-2 years after the first medical consultation. This is due to the tendency to assign the symptoms to common abscesses, folliculitis or acne<sup>28-30</sup>.

To stage the disease, several classifications and scores have been proposed (Table I). An ideal staging should reflect the severity of the lesions, the functional and social prognosis, but especially serve to the choice of treatment. The Hurley classification, the best known, is simple and easy to use, but unfortunately, it is not very useful to establish the therapeutic strategy. In the case of our patient, the lesions were in Hurley stage 3 for the sacral and axillary regions and Hurley stage 2 in the groin and genital regions. However, we felt the need to further stage the severity of the lesions classified as stage 3 Hurley in order to establish the sequence of interventions, given that the patient requires complex reconstructive operations, which could only be performed in series. Scores that are based on counting of all lesions (the best known being the Sartorius score, HSS) allow

both the calculation of a global score and the quantification for each anatomical region, and can be a useful tool for ranking the severity of regional lesions. These scores have a cumbersome and time-consuming methodology, and present difficulties in classification of the confluent lesions<sup>24</sup>. For this reason, the Sartorius score is not important for simple cases, but it becomes very useful in complex cases.

Pain and retractile scars often lead to limited mobility. The presented patient had a limitation of arm abduction to 45°. Physical disability is worsened by social integration problems due to odor, frequent soiling of clothing, impossibility to undress in the presence of other people<sup>12,19,20</sup>. Patients are labeled as having a poor hygiene and possibly contagious. These prejudices are difficult to combat and lead to patient's social rejection. Involvement of the groin and sexual organs leads to sexual dysfunction in both sexes<sup>31,32</sup>. Different scores have been used in several studies in order to assess the impact of this condition on patients' quality of life. Their results show that hidradenitis suppurativa alters patients' quality of life more than other dermatological conditions<sup>19,31,33</sup>. Recently, a dedicated score (the HIDRA score) was introduced. This score evaluates 10 parameters: general state of health, pain, odor, symptom control, skin involvement, personality, social life, sexual life, work and daily activities<sup>34,35</sup>.

TABLE I - Staging classifications and scores in hidradenitis suppurativa<sup>12,20,24-27</sup>

Hurley classification	Sartorius score (Hidradenitis Suppurativa Score)	HSS index (Hidradenitis Suppurativa Severity Index)	HS-PGA scale (the Hidradenitis Suppurativa Physician's Global Assessment scale)	AISI (Acne Inversa Severity Index)
Stage 1: Abscess formation (single or multiple) without sinus tracts and cicatrization	1. Anatomical region (0-3) - 3p for each affected region - 0p - none	1. Number of sites 1p: one site 2p: 2 sites 3p: 3 sites 4p: ≥ 4 sites	Stage 1 (clear): no inflammatory nodules Stage 2 (minimal): noninflammatory nodules Stage 3 (mild): < 5 inflammatory nodules or one abscess / draining fistula Stage 4 (moderate): < 5 inflammatory nodules or 1 abscess / draining fistula and one / more inflammatory nodules or 2-5 abscesses / fistulas and <10 inflammatory nodules Stage 5 (severe): 2-5 abscesses / fistulas and 10 / more inflammatory nodules Stage 6 (very severe): < 5 abscesses / fistulas	1. Lesions 1p: comedon 2p: abscess 3p: sinus tract 4p: keloid / fibrotic adherence 5p: fibrosclerotic plaque Lesion's partial score (LPS) = every type of lesion multiplied with the number of sites where the lesion is present
Stage 2: One or more widely separated recurrent abscesses with tract formation and scars	2. Type of lesion (1- 4) -4p for each fistula -1p for each nodule / -abscess / scar / other	2. Body surface area (%) 1p: 1% 2p: 2-3% 3p: 4-5% 4p: > 5%		2. Pain (using visual analogic scale) 0-10
Stage 3: Multiple interconnected tracts and abscesses throughout an entire area	3. Involved area (2-8) -2p < 5 cm diameter -4p 5-10 cm diameter -8p >10 cm diameter	3. Number of lesions 1p: 1 2p: 2-3 3p: 4-5 4p: > 5		
	4. Normal skin between lesions -0p: there are normal skin areas between lesions -6p: there is no normal skin between lesions (Hurley III)	4. Number of dressing changes-working hours 2p: 1 3p: >1		
	HSS = the sum of the above criteria	5. Pain (using visual analogic scale) 1p: 1 2p: 2-4 3p: 5-7 4p: 8-10		AISI = LPS + Pain
		HSSI = the sum of the above criteria		

In our patient, the bacterial cultures showed an association of germs originating in the digestive tract (*Proteus mirabilis*, *Escherichia coli*, *Klebsiella spp*), but in the documents issued by the hospital that previously treated him, the bacterium *Staphylococcus epidermidis* was mentioned. Coagulase-negative staphylococci are commonly found in the deep portion of hidradenitis lesions from the early stages of the disease<sup>36-39</sup>.

Their presence is explained by the opportunistic behavior of these bacteria. It is not the infection that is the primary cause of the disease, but the obstruction of the hair follicles. Bacterial colonization is a secondary phenomenon that maintains chronic inflammation and aggravates the lesions. Over time, colonization with anaerobic bacteria (*Peptostreptococcus spp*, *Propionibacterium acnes*) and gram-negative bacteria from the digestive tract occurs<sup>36,38,39</sup>.

The treatment of the disease is not standardized. The multitude of therapeutic variants described in the literature is an indirect confirmation of the fact that this disease is still waiting for an optimal treatment solution. However, it is generally accepted that treatment must be adapted to the stage of the disease.

Antibiotic treatment is necessary in most cases. However, this is not the etiopathogenetic treatment as hidradenitis is not an infectious disease. Empirically administered antibiotics can have some beneficial effects, but are often inefficient. In the early stages (few painful nodules), antibiotics can stop the disease, but probably simple measures such as stopping hair shaving or stopping using solid antiperspirants have the same effect. In the advanced stages, antibiotic treatment must cover a wide range of germs. The antibiotics that have proven to be the most effective in this disease are clindamycin (in systemic and topical administration) and tetracycline in general administration<sup>38,40-42</sup>. Other antibiotics used are rifampicin, moxifloxacin and metronidazole<sup>42</sup>. In the present case, the general and topical antibiotic treatment with clindamycin resulted in the healing of the lesions in the early stages and the reduction of the advanced lesions, allowing a more limited surgical resection.

The reduction of inflammation is obtained by immunosuppressive treatment, corticotherapy and treatment with anti-TNF- $\alpha$  monoclonal antibodies. Cyclosporine treatment improves the clinical condition in half of the cases, but the improvement is transient and the treatment has significant side effects<sup>12,43-45</sup>. Some studies have shown that intralesional injection of corticosteroids has favorable effects<sup>46,47</sup>, but other studies do not support this observation<sup>48</sup>. Systemic administration of corticosteroids is effective, even in low doses<sup>49</sup>. In the patient in question, the administration of prednisone in combination with topical treatment with clindamycin led to the healing of Hurley stage 2 lesions and to the amelioration of Hurley stage 3 lesions.

The most promising conservative treatment at present is that with anti-TNF- $\alpha$  monoclonal antibodies. Infliximab

was originally used in patients with hidradenitis associated with Crohn's disease, followed by the disappearance of axillary nodules of hidradenitis<sup>50,51</sup>. Adalimumab, subsequently introduced, is effective in wound healing and pain reduction and is better tolerated<sup>52</sup>.

Surgical treatment is often necessary, but there is no standardization. When the patient presents with abscessed nodular lesions, the incision and evacuation of the pus are usually performed. However, this is not always followed by healing; chronicity and progression to more severe lesions are common<sup>53,54</sup>. In our opinion, the excision of the nodules is justified even in the forms in which they are fistulized. For simple nodules, CO<sub>2</sub> laser surgery is probably the best option<sup>55</sup>. In the case of extensive lesions, wide excision is the only option<sup>53-56</sup>. Wide excision is not defined, but we believe that the resection edge should be in the healthy tissue around the excised lesions. The problem resulting from these excisions is the coverage of the resulting skin defect. For limited excisions, secondary healing is the logical and convenient option. The healing time is 10-14 days and healing is done with scars that do not impair functionality. In the case of large defects, secondary healing would involve a long period and the risk of retractile scars. As a result, the plastic procedures for covering the skin defect, respectively the free skin graft or the covering with local or pedicled flaps, must be considered. In the presented case, systemic conservative treatment (antibiotic and corticosteroid therapy) along with topical treatment were initiated to reduce the inflammation and bacterial contamination before surgery. This way the lesions in the groin, scrotum and penis healed, and the lesions in the sacrococcygeal and axillary regions decreased in size, which was important in order to be able to perform limited surgical excisions. Taking in account the multitude of lesions, we considered necessary to perform seriate surgical interventions. The dry gangrene of the initial axillary flap was a consequence of the insufficient blood flow through the vascular pedicle, but it required a new plasty. The second flap had a better evolution, with only wound dehiscence that healed per secundam.

A special feature of the case was the random discovery of a subvalvular aortic stenosis through subaortic membrane, surgically correctable. We considered this an additional argument for surgical treatment, given the need to eliminate every source of infection before cardiac intervention. Unfortunately, we have not reached this goal whereas the patient failed to appear for the last scheduled operation, and was lost from clinical observation.

## Conclusions

Hidradenitis suppurativa is a physically and socially disabling condition that is frequently diagnosed after a long delay. Treatment is not standardized, but advanced cas-

es require extensive surgical excision followed by complex reconstructive surgery. The main problem after excision is the coverage of the resulting skin defects. Secondary healing may be an option, but when the defect is wide, free skin or flaps are required to prevent retractile scars and shorten the healing period. Simultaneous involvement of several anatomical regions may require seriate surgical interventions.

## Riassunto

L'idrosadenite suppurativa è una malattia sottovalutata per frequenza, conseguenze e difficoltà di trattamento. Considerata una malattia minore, per il paziente si presenta alquanto invalidante fisicamente e socialmente, mentre per il medico rappresenta una sfida nella scelta del trattamento appropriato.

La malattia fa parte della tetrad delle patologie causate dall'occlusione follicolare, che comprende anche l'acne conglobata, la cellulite dissecante del cuoio capelluto e la malattia sacro-coccigea pilonidale. Conseguentemente all'ostruzione, si verifica l'infezione da germi opportunisti. L'idrosadenite suppurativa si localizza tipicamente nelle regioni ascellari e inguinali, ma può manifestarsi in tutte le regioni ove le ghiandole sudoripare apocrine sono abbondanti (cosiddetta linea lattiginosa).

La suppurazione cronica senza tendenza alla guarigione e la formazione di cicatrici retrattili che limitano i movimenti sono alquanto invalidanti per il paziente. Il dolore e la limitazione dei movimenti portano a disabilità fisica, e l'odore di suppurazione, la comparsa di ferite e i pregiudizi (la tendenza ad attribuire la malattia al deficit di igiene) portano a disabilità sociale.

Il trattamento della malattia rappresenta una sfida per il medico. La terapia con corticosteroidi e il trattamento con infliximab portano a risultati apprezzabili, ma quando la malattia è avanzata, le cicatrici retrattili e le fistole purulente possono essere risolte solo chirurgicamente. L'abscissione delle lesioni lascia estesi difetti cutanei, che talvolta richiedono interventi complessi e sembrano sproporzionati rispetto alla banalità della malattia. Presentiamo il caso di un giovane con idrosadenite avanzata, che ha richiesto un ricovero prolungato e diversi interventi chirurgici per una parziale risoluzione della malattia. Alla presentazione il paziente aveva orifizi fistolosi multipli e purulenti, seni e cicatrici retrattili su entrambe le ascelle, orifizi fistolosi e un'estesa suppurazione nella regione sacrale, ulcerazioni a livello dei solchi inguino-scrotali e del prepuzio. La mobilità di entrambe le braccia era limitata dal dolore e dalle cicatrici retrattili. Il trattamento conservativo (terapia antibiotica, terapia corticosteroidica, trattamento antisettico locale delle lesioni) ha portato alla guarigione delle lesioni inguino-scrotale e del prepuzio e al miglioramento delle lesioni ascellari (compreso il miglioramento della capacità di abduzione delle braccia). Per le lesioni sacrali e

ascellari sono state necessarie ampie escissioni e plastiche complesse, seguite da un'evoluzione sinuosa e una lenta guarigione. La risoluzione completa della malattia sarebbe stata auspicabile soprattutto perché il paziente presentava anche bisogno di un intervento chirurgico per la stenosi aortica clinicamente inapparente, ma che poteva essere eseguito solo dopo aver risolto i focolai settici. Il caso illustra le difficoltà terapeutiche che una malattia minore può sollevare quando le lesioni sono avanzate ed estese.

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